IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/565,101	Confirmation No.	7232
Inventors	:	Tetsuhiro Ishikawa, *et al.*	TC/A.U.	1795
Filed	:	January 19, 2006		
Title	:	FUEL CELL SYSTEM . . .		
Examiner	:	Amanda Barrow		
Attorney Docket No.	:	10517/311		

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Alexandria, VA 23313-1450

REQUEST FOR PRE-APPEAL REVIEW

Sir:

In response to the final Office action mailed July 19, 2010, ("the Office Action") and the Advisory Action mailed September 27, 2010, ("the Advisory Action") the Applicant respectfully requests review prior to the filing of an Appeal Brief. Without waiving any argument, the Applicant presents the following remarks for your consideration.

I. Current Status of the Application

Claims 1 – 9, 15, and 17 are currently pending in the present application. Claims 1 and 8 are independent. Claims 1 – 9, 15, and 17 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent Application Publication No. 2003/0118876 ("Sugiura").

II. Remarks Regarding the Rejection Under § 103

The Examiner's position on the present application may be summarized in a single sentence: Because a rate of change of voltage is based on voltage values over time, one skilled in the art would use the two interchangeably. Put another way, the Examiner contends that

$$dV/dt \approx V.$$

The Applicant respectfully traverses.

One example of a fuel cell system in accordance with claim 1 of the present application includes a fuel cell, an electric power storing device (such as a secondary battery), and an electric power supplying device for supplying power from the fuel cell and storing device to a load. In order to operate the fuel cell as efficiently as possible, the system supplies power in either an intermittent mode or a continuous mode. In the continuous mode, the fuel cell (and, in certain circumstances, also the power storing device) supplies power to the load. In intermittent mode, only the power storing device supplies power.

A system in accordance with this claim may also provide a control device for determining when the system should switch between intermittent and continuous modes. For example, the control device may dictate that the system will operate in intermittent mode (*i.e.* only the storing device supplies power) when the amount of power required by the load is less than a reference value. Otherwise, the system will operate in continuous mode, and the fuel cell supplies power.

The above reference value may be a minimum value for efficient operation of a fuel cell. In other words, a fuel cell operating below this value would no longer be operating efficiently. In such cases, it is desirable to operate in intermittent mode. However, this value changes during operation of the fuel cell. Noting that one such factor is the output voltage of the fuel cell, the present inventors designed a system that effectively determines when to switch operating modes.

In order to determine an appropriate reference value more effectively, the system recited by claims 1 and 8 of the present application provides a threshold value adjusting device. One example of this device alters the reference value based on the voltage output of the fuel cell. As shown in Figure A below, this exemplary device increases the reference (*i.e.* threshold) value as the voltage output of the fuel cell increases.

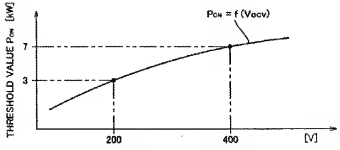

Figure A: FIG. 8 of the Published Application

Sugiura, on the other hand, discloses a power supply apparatus having a fuel cell and a capacitor. The apparatus also includes fuel cell mode determination means for determining when to operate in an "FC suspended mode" (similar to an intermittent mode) or a normal mode in which only the fuel cell supplies power. Sugiura's determination means measures a voltage from the capacitor and compares this voltage with a reference voltage. Based on this comparison, the determination means either opens or closes switches that connect the fuel cell to a load. As shown in Figure B below, Sugiura teaches altering the reference voltage based on the rate of increase of the voltage of the capacitor (dV_c/dt). Note that, as shown in Figure C below and described in paragraph [0081] of Sugiura, the reference voltage increases as the capacitor voltage rate decreases.

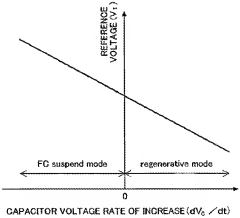

Figure B: FIG. 8 of Sugiura

Although Sugiura fails to teach varying a threshold value in accordance with an output voltage of a fuel cell, the Office action alleges that it would have been obvious for one of ordinary skill in the art to do so. Essentially, the Office action argues that, because the rate of change of voltage output relates to voltage output, it would have been obvious to use voltage output as a variable for adjusting a reference value. Further, the Office action argues that, because the reference discloses that the power supply apparatus may comprise a fuel cell and a capacitor, it would have been obvious to use a measured quantity from either to adjust a reference value, even though Sugiura itself only discloses using a measured quantity from the capacitor.

Both the Office Action and the Advisory Action argue that "the rate of change of the output power level of the power supply apparatus is directly related to the output voltage of the

fuel cell." (Advisory Action at 2.) The Applicant respectfully disagrees. While the rate of change of a voltage is dependant upon the voltage at various points in time, the actual rate of change is different from the voltage itself. A device which alters a quantity based on the rate of change of voltage would function much differently from a device that alters a quantity based on the discrete value of the voltage at any given point. For example, the rate of change of the voltage can fluctuate wildly while the voltage itself remains within a fairly narrow range. A device, such as that in Sugiura, that varies a quantity based on the rate of change would result in an equally rapid change in the quantity. A device, such as that described by claims 1 and 8 of the present application, however, would not vary the quantity rapidly in such a case, as the discrete value of the voltage at any given point matters, rather than a comparison of how that value fluctuates over time. Voltage and rate of change of voltage are two different quantities that will produce different results if used interchangeably. And one of skill in the art would not think to use the former simply because use of the later was known. Further, no reason for making such a modification has been provided.

Accordingly, the Applicant respectfully submits that this leap in logic amounts to hindsight bias, because the teachings of the present invention are being used to modify Sugiura to arrive at the present application's claims. There is nothing in Sugiura itself (or any other reference of record) that suggests substituting rate of change of voltage with voltage. Rather, the Examiner's lengthy analysis pushes the disclosure of Sugiura far beyond what one of ordinary skill in the art would consider to be taught therein. Such hindsight reasoning is impermissible. M.P.E.P. § 2145(X)(A) (prohibiting using knowledge "gleaned only from applicant's disclosure").

In addition, the Office Action has failed to establish that Sugiura teaches decreasing a reference value as fuel cell voltage output decreases, as recited by the independent claims. The Advisory Action argues that the threshold value in Sugiura may be based on either the fuel cell or the capacitor, and that an increase in one would lead to a decrease in the other. Thus, because the threshold value decreases with increasing capacitor voltage rate of change (as shown in Figure B above), it would necessarily have to decrease with decreasing fuel cell voltage rate of change. However, this again confuses rate of change of voltage with voltage itself. As outlined above, the two quantities are distinct and would produce different results. Sugiura at best

teaches an inverse relationship between rate of change of capacitor voltage and a reference value. Nothing in the references of record suggests changing this inverse relationship.

For at least these reasons, the § 103 rejection of the independent claims is improper. Specifically, the Office Action has failed to show how Sugiura teaches adjusting a reference value such that the reference value decreases as fuel cell voltage (*not* rate of change of voltage) decreases. Rather, the Office action has used impermissible hindsight bias to reconstruct the claims of the present application. For at least these reasons, the Applicant respectfully requests withdrawal of the § 103 rejection of claims 1, 8, and all claims depending therefrom.

III. Conclusion

The Examiners are invited to contact the Applicant's representative to discuss any issue that would expedite allowance of the present application.

Any fees for extension(s) of time or additional fees that are required in connection with the filing of this request are hereby petitioned under 37 C.F.R. § 1.136(a), and the Commissioner is authorized to charge any such required fees or to credit any overpayment to Kenyon & Kenyon, LLP Deposit Account No. 11-0600.

Respectfully submitted,

Dated: October 19, 2010

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